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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,332	04/02/2001	Jackson I. Ito	MAC-0113-US	9413
27810	7590	07/26/2004	EXAMINER	
EXXONMOBIL RESEARCH AND ENGINEERING COMPANY P.O. BOX 900 1545 ROUTE 22 EAST ANNANDALE, NJ 08801-0900			LEUNG, JENNIFER A	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 07/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/824,332	ITO ET AL.	
	Examiner	Art Unit	
	Jennifer A. Leung	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 26,29-38 and 54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26,29-38 and 54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 3, 2004 has been entered.

### ***Response to Amendment***

2. Applicant's amendment filed May 3, 2004 has been received and carefully considered. Claims 1-25, 27, 28, 39-53 and 55-57 are cancelled. Claims 26, 29-38 and 54 remain active.

### ***Response to Arguments***

3. Applicant's arguments have been fully considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 26, 30-37 and 54 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaufman (EP 0 593 171).

Regarding claims 26 and 54, Kaufman discloses a riser reactor **20** (FIG. 1) comprising at least one feed nozzle (i.e., atomizer **100**; FIG. 1, 2), wherein the feed nozzle comprises,

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a central passageway (i.e., annular passage **125**) having at least one feed inlet (i.e., inlet **121**);  
an outlet (i.e., of width **c**; see FIG. 2) comprising an atomization zone in fluid communication with the reactor (i.e., atomization zone **150**);  
at least one atomization fluid passageway (i.e., annular passage **129**) fluidly communicating with the central passageway **125** via an atomization fluid passageway outlet (i.e., located between conduits **109** and **110**, identified by width **g**; see FIG. 2);  
a heating zone configured to promote heat exchange between the feed within passage **125** and the atomization fluid within passage **129** prior to the feed and atomization fluid mixing in the atomization zone **150** (i.e., by the inherent heat transfer through the wall of conduit **109** in the region of direct contact with the atomization fluid in passage **129**, the conduit wall comprising 9 chrom-1-moly steel, for example; see EXAMPLE 1); and  
a first mixing zone (i.e., immediately downstream of the openings of width **b** and **d**) comprising a second inlet for an atomization fluid (i.e., atomization fluid fed through inlet **120**) positioned upstream from the atomization fluid passageway outlet **129/g**, wherein the second inlet **120** comprises a sparger (i.e., as defined by conduit **108**) having at least one fluid passageway (i.e., atomization fluid passage **124**) configured to allow fluid passage into the central passageway **125** to promote an axial and/or radial flow relative to the overall direction of the fluid flow in said central passageway **125** (i.e., as evidenced by, “The inner flowing surface [of the liquid feedstock] is impacted by the first axial flow of gas at an impact angle of 5° to 45°,” page 3, line 57+; FIG. 2).

Regarding claim 30, Kaufman discloses the atomization fluid passageway outlet **129/g** comprises a forward acute angle greater than 60° (i.e., “The outer flowing surface [of the liquid

feedstock] is impacted by the second angular flow of gas at an impact angle of 15° to 90°," page 3, line 58 to page 4, line 1; FIG. 2).

Regarding claim 31, Kaufman (FIG. 2) discloses the central passageway **125** has a circular cross-section (i.e., as defined by a cylindrical conduit **109**), wherein the atomization fluid passageway outlet **129/g** is positioned concentrically about the central passageway (i.e., as defined by cylindrical conduit **110** being placed concentrically about conduit **109**).

Regarding claims 32 and 37, Kaufman discloses the central passageway **125** (see FIG. 2) has a cross-section having two-dimensions, wherein at least one (i.e., both) of the two dimensions converges in the downstream direction along at least a portion of the length of the central passageway (i.e., the inside diameter of conduit **109** narrows to a diameter having widths **e** and **c** at the downstream end; page 4, lines 45-49).

Regarding claim 33, Kaufman (FIG. 2) discloses the atomization zone **150** comprises a spray distributor defining a fluid passageway (i.e., tip shield **140**; page 4, lines 53-58).

Regarding claims 34 and 35, Kaufman discloses the spray distributor **140** passageway (see FIG. 2) has a cross-section comprising two dimensions, wherein at least one of the dimensions diverges in a downstream direction along at least a portion of the length of the spray distributor fluid passageway (i.e., tip shield **140** having a distance **h** and fastened to conduit **110** at a diverging angle **i**; page 4, lines 53-58).

Regarding claim 36, Kaufman discloses co-planar passageways for the converging dimension of central passageway **125** and the diverging dimension of spray distributor **140** (see FIG. 2; page 4, lines 53-58).

Instant claims 26, 30-37 and 54 structurally read on the apparatus of Kaufman.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman (EP 0 593 171) in view of Dou et al. (US 5,306,418).

Kaufman is silent as to central passageway **125** comprising a stream splitter positioned within the central passageway **125** and upstream from the position at which the atomization fluid passageway **129** exits into the central passageway, at the location of width **g** (see FIG. 2). Dou et al. teaches a FCC feed nozzle (FIG. 5) for the atomization of a liquid feed stream supplied via inlet **20**, wherein the feed nozzle comprises a central passageway **22** containing a stream splitter (i.e., impingement plug **50**; column 10, line 54 to column 11, line 35). It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a stream splitter to the central passageway **125** in the apparatus of Kaufman, on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the stream splitter would provide further atomization of the oil/steam mixture, as taught by Dou et al.

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6. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman (EP 0 593 171) in view of Dean et al. (US 4,331,533).

Kaufman is silent as to riser reactor **20** comprising a plurality of feed nozzles **100** (FIG. 2). In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a plurality of feed nozzles to the riser reactor of Kaufman, on the basis of suitability for the intended use and absent showing any unexpected results, because the duplication of parts merely involves ordinary skill in the art. *St. Regis Paper Co. v. Beemis Co. Inc.* 193 USPQ 8, 11 (1977); *In re Harza* 124 USPQ 378 (CCPA 1960). Dean et al. (FIG. I, IV; column 16, line 59 to column 17, line 29) evidences this well known concept by teaching a riser reactor **2** comprising a plurality of feed nozzles **4** for introducing feed and steam, to achieve a high temperature catalyst suspension as desired by the processing concepts of the invention.


### **Conclusion**

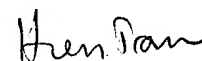
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung

July 21, 2004 



**HIEN TRAN**  
**PRIMARY EXAMINER**